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THE MONIST

FOR LOGISTICS.¹

INTRODUCTORY NOTE.—M. POINCARÉ AND M. COUTURAT.

Soon after Mr. Bertrand Russell's *Principles of Mathematics* of 1903 was published, M. Louis Couturat gave an exceedingly interesting popular account of this and other works in the *Revue de Métaphysique et de Morale* for 1904 and 1905, which was afterwards published in book form in 1905² with an appendix on Kant's philosophy of mathematics read at the celebrations in 1904 of the centenary of the death of Kant. Then M. Henri Poincaré thought fit to publish, in the above *Revue*, a series of articles of which this is a list:

"Les mathématiques et la logique," *Revue*, Vol. XIII, 1905, pp. 815-835; Vol. XIV, 1906, pp. 17-34; and *ibid.*, pp. 294-314; "La logique de l'infini," *ibid.*, Vol. XVII, 1909, pp. 461-482.

In connection with some of the subjects so lightly and gracefully touched upon by M. Poincaré appeared the following:

Mario Pieri, "Sur la compatibilité des axiomes de l'arithmétique," *Rev. de Métaphys.*, Vol. XIV, 1906, pp. 196-207.

Louis Couturat, "Pour la Logistique (réponse à M. Poincaré)," *ibid.*, pp. 208-250.

B. Russell, "Les paradoxes de la logique," *ibid.*, pp. 627-650.

The writings of M. Poincaré are well known to the readers of *The Monist*. His criticisms are refreshingly light and gay and he never allows profundity to obscure his wit. It is, however, unfortunate that his airy remarks on modern logic—which, by the way, he confesses rather needlessly that he has not studied—have been taken so seriously by many. It is, as newspaper editors know, a tendency of the public to read with interest and even to accept uncritically the opinions of an eminent person on matters about which he is not an expert. The views of a well-known football player on

¹ Translated by Philip E. B. Jourdain.

² *Les principes des mathématiques avec un appendice sur la philosophie des mathématiques de Kant.*

the science of anatomy would no doubt be widely read, and the views of M. Poincaré on the philosophical questions at the root of mathematics are not, in essentials, of a very different nature. It is part of the business of anatomy to study deeply these faculties which the athlete uses unconsciously. The analogy is quite evident. M. Poincaré is one of our greatest mathematicians, and centuries have proved that a man who is a great mathematician need be neither a great philosopher nor a great logician. We do not expect such a combination of qualities, . . . nor, as a rule, do we find them.

M. Louis Couturat gave a very full and adequate reply to the first two of M. Poincaré's articles. In spite of this M. Poincaré reproduced, in the same words, his refuted arguments in his lately published book *Science et Méthode*. The chapter entitled "Les Mathématiques et la Logique" on pp. 152-171 of the book is almost identical with pp. 815-824 of the first article; the chapter entitled "Les Logiques nouvelles" on pp. 172-196, which is that translated on pp. 243-256 of *The Monist* for April, 1912, is an abridged version of pp. 826-835 of the first paper and the second article. The chapter entitled "Les derniers efforts des Logisticiens" on pp. 192-214 reproduces much of the less technical parts of his third article, and this article, which is translated in the present number, was replied to by Mr. Russell in his above cited paper.

The fourth article of M. Poincaré is concerned principally with a memoir on the theory of "logical types" published by Russell in 1908 and with one on the foundations of the theory of aggregates published by Zermelo in the same year.

It is quite obvious that nobody should allow himself to speak or write in terms of approval or disparagement of a branch of study with which he has only a superficial acquaintance. Each of us is free to dislike or like a particular subject and to leave it alone or to cultivate it accordingly, and if he finds good reasons for so doing he ought to publish them. But not even the most eminent can really think that a brightly written condemnation of a subject, based on a very superficial acquaintance with it, is of any real value. Indeed, the more eminent a person is, the more able he generally is to prevent us from seeing the truth. And then, besides the thought of the efforts of others to perceive the truth, there is the very noble sentiment with which M. Poincaré begins his book *La valeur de la science*: "The search for truth ought to be the aim of our activity; it is the only end which is worthy of it." Very nice, but with regard to what the French call "logistics" or "mathematical logic,"

and everybody used to call "symbolic logic," M. Poincaré has not been as true to his lofty sentiment as his admirers have learned to expect and demand.

Under these circumstances it seems only fair—I do not mean to logistics but to the public—to give people the opportunity to read M. Couturat's answer as well as M. Poincaré's attack.

In the following translation, any bibliographical or other notes which I have added are enclosed in square brackets. Where possible I have abbreviated the translation and avoided the use of symbols.

There are a few passages in M. Couturat's article which may possibly give rise to a wrong impression. Thus, he speaks of logical demonstrations making true the chance finds of the intellect. Of course the process of demonstration does not do this: It gives the finder and other people certainty as to whether the find is true or not. But we must not accuse M. Couturat of being a pragmatist on the slender grounds of a loosely expressed sentence; especially as in other parts of this article he has protested in the clearest possible way against the confusion between creation and discovery.

Near the end of the second section there is a reference to a number of mathematicians who failed adequately to deal with the paradox discovered by Burali-Forti, among whom are mentioned Russell and myself. The article of Russell referred to contains, implicitly, a criticism of certain views widely held by mathematicians at that time and also—again implicitly—the solution of the paradox and others like it. This of course was familiar to M. Couturat, but the citation of Russell in that connection might mislead some people. With regard to myself, at the time (1903-1904) that I wrote the papers referred to I was hardly, as M. Couturat says, "totally a stranger to logistics," but I freely grant that I was not as familiar with it as is necessary even to grasp the full bearings of the question. My attempt at the solution, though I believe it has one small merit in distinguishing between what may be called *entity* and *existence*, I have since then abandoned.

The discussion, in the third of M. Couturat's sections, of the question of *existence* does not appear to me to be satisfactory, and I have added a note referring to some former remarks of mine on this subject in *The Monist* for January, 1910. P. E. B. J.

REPLY TO M. POINCARÉ.

I thank M. Poincaré for the honor which he has done me by taking me in particular as the subject of his articles